



## **The Frasca Primary Skills Trainer: A PC-based Simulator for Instrument Training**

### **Summary**

The Aviation Training Brigade (ATB) is sponsoring Transfer of Training (TOT) research using the Frasca Primary Skills Trainer (PST). ATB considers this research critical to its decision to replace the expensive, complex, and outmoded 2B24 instrument training simulators with a more up-to-date system that is more cost- and training-effective.

### **AVATAR: Simulation-Based Aviation Training**

This project is germane to ARI's Science and Technology Objective (STO), in that it explores the TOT characteristics of a low-cost, PC-based training device, in direct comparison with the one currently employed by Army Aviation. This research should provide input into the decision-making process. The transfer characteristics and training effectiveness of the Frasca PST need to be investigated before any acquisition decisions on devices similar to it are made.

### **Description**

The Frasca PST is a non-motion-based simulator. Its cockpit is modeled after that of the TH-67 helicopter, with dual flight controls, flight instruments, and



**STUDENT PILOTS TRAINING IN THE  
FRASCA PST**

system indicators. The avionics can be used to train instrument flight rules (IFR) operations. A variety of environmental conditions, including wind speed and direction, turbulence, visibility, cloud ceiling, and day, dusk or night illumination can be simulated. The out-the-window view is projected onto a screen in front of the cockpit. All locations in the visual database (e.g., airfield, helipad, taxi lanes) are accurately modeled and internally consistent in terms of latitude, longitude, and magnetic compass orientation. The 2B24 simulator, currently used for instrument training, was designed to simulate the UH-1. It has no out-the-window visual display system and is mounted on a motion platform; it is based upon late 1960s technology.

The TOT study, in progress since July 2000, seeks to compare the performance of student pilots completing instrument training in the PST vs. the 2B24. The PST is used as an integral part of the training program, and students must meet the same performance standards, the only difference being the simulator. Thus far, students from eight Initial Entry Rotary Wing classes have performed the simulator phase of instrument training in the PST. Their performance, in simulator and aircraft, will be compared to a control group of similar students trained in the 2B24. Follow-up

research is planned to examine the TOT characteristics of motion/ non-motion systems on the 2B24, some of which will be upgraded to TH-67 standards. Other research will examine the optimal mix of PST vs. aircraft training hours for basic and advanced instrument training. At present, 30 hours are spent in the simulator vs. 20 in the aircraft.

For additional information, please contact Dr. John Stewart, Mr. William Barker, or Mr. Dale Weiler, ARI Rotary-Wing Aviation Research Unit, Fort Rucker at DSN 558-2834 or Commercial (334) 255-2834, or email at [stewartj@rwaru.army.mil](mailto:stewartj@rwaru.army.mil).